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and *P. vetus*), and two rails (*Telmatornis priscus* and *T. affinis*). Besides these there are descriptions of four species of Tertiary birds, the first that have been regularly described from that formation in this country. These are said to be more closely allied to existing species than those of the Cretaceous. They are *Puffinis Conradi*, *Catarractes antiquus*, *Grus Haydeni*, and *Graculus Idahensis*.

Though the discovery of that remarkable bird, the Archæopteryx, in the Jurassic beds, led naturalists to suppose that Cretaceous forms would be eventually discovered, to Professor Marsh's energy we owe the fulfilment of these anticipations.

NATURAL HISTORY MISCELLANY.

BOTANY.

Hibernation of Duck-weed. — It has long been known that some species of *Lemna*, or duck-weed, produce, at the approach of winter, leaves of a different character to those formed in the spring, which fall to the bottom of the pond or stream, enabling the plant to live through the winter. A series of more accurate observations on this point is recorded by M. Van Hoven in the "Bulletin de la Société Royale de Botanique de Belgique." The species of *Lemna* indigenous to Belgium are the same as those found in this country; of these M. Van Hoven finds that two only, the *L. polyrrhiza* and *gibba*, produce leaves of a different form in winter; while with the three other species, *L. minor*, *trisulca*, and *arrhiza*, the ordinary leaves live through the winter, remaining on the surface. In *L. polyrrhiza* these winter-leaves first make their appearance in August or September. They are much smaller than the ordinary leaves, reniform or sometimes elliptical, olive-brown on both sides, and not gibbous beneath; their roots are exceedingly minute, and at first hidden within the leaf. The aëriferous cells which serve to support the ordinary leaves on the surface do not exist, causing the winter leaves to resemble an undeveloped bud. In consequence of the absence of these vessels they are heavier than the water, and fall to the bottom as soon as any agitation of the water detaches them from the parent leaf, which perishes with the first frost. At the ordinary period of the revival of vegetation, a small bubble of oxygen appears on the upper surface of these submerged leaves, which carries them to the surface, from which they again descend should the temperature fall below a certain point. In *Lemna gibba*, leaves of a similar character were observed hibernating beneath the water, differing in shape, size, and structure from those developed during the summer. — *Quarterly Journal of Science.*

THE FRAGARIA GILLMANI AGAIN.—In simple justice to those concerned, I think it but right to state that specimens of this strawberry have lately been examined by Dr. Asa Gray, and that he confidently considers it *F. Mexicana* Schlechtendal. At the same time he admits that Schlechtendal in his description has omitted all mention of the well-developed leaf on the scape, which Dr. Gray allows, "proves to be, or to be connected with, the distinguishing character of the species," adding that "no one could tell from Schlechtendal's description whether or not he had a plant like this in view." It will thus be seen that he does not entertain the idea that it is merely "an accidental variation of *F. vesca*," as some would have made it, and that whether it is a new species or not, it is one not hitherto described, or at least not sufficiently so for identification.

In view of the interest at present manifested in England in regard to the *Everlasting Andine Strawberry*, and the discussion as to whether it would retain its perennially fruitful habit, I would state that the Mexican everbearing strawberry (*F. Gillmani* Clint.) has held this everbearing character for ten years in the State of Michigan. Plants removed to the house from the open ground last January are now (March 22d, 1870) in fruit. The plant has been raised from seed during the past season, and the seedlings continue to produce all the characteristics of the parent plants, with dichotomous stem and racemose flowers, even to the blossoming and fruiting of the stolons, and that when but four months old! — the leafy character of the stem being a marked feature. — HENRY GILLMAN, *Detroit, Michigan.*

VITAL FORCE AND COLOR IN PLANTS. — In my remarks on the yellow-flowered variety of the purple Sarracenia, in the March number of the NATURALIST, the parenthesis, on page 44, contains an evident *lapsus pennæ.* Instead of reading "(white being taken as absence of color)," it might be corrected and improved so as to read as follows: — "(white being taken as accession of color and diminution of vital force.)" It has been repeatedly demonstrated that plants with variegated leaves, such as are so greatly sought after at present, are much more delicate than their plainer brethren, which, with less color, require less protection. This, I believe, is well understood by nurserymen who govern themselves accordingly. A multitude of facts are, day by day, grouping themselves about this interesting subject, and more clearly defining the laws which govern it. As we better understand the effects on vegetation of different mineral constituents of the soil, more light will be shed in this direction.

It has been remarked that when a flower is of two colors, they are almost always complements of each other. Familiar instances of this are the forget-me-not and the autumnal asters. More beautiful instances are the fairy bird's-eye primrose of the rocks (*Primula farinosa* Linn.), bearing pale lilac blossoms with yellow eyes, powdered with silvery farina, and the peerless calypso, nymph of the hemlock groves (*Calypso borealis* Salisb.), with brilliant purple petals, and lip maculated with a darker purple, almost hiding the flush of rare yellow glory within. Where there are three colors, the third is commonly white, — the union of the other two, as it were. A fine illustration of this is seen in the showy moccason-flower (*Cypripedium spectabile* Swartz.). The snow-white petals spread above the inflated lip of as perfect a white melting into pink, which in turn, deepens into purple in front; while, drooping into the cavity, depends the singular petal-like sterile stamen of a pale lemon-color blotched with tawny spots. Another elegant example of this is presented by the *Calopogon pulchellus* R. Br., the club-shaped hairs in the beautiful beard of which are pure white, bright yellow, and rich purple. The white is distributed, if we may use the expression, into yellow and purple. — HENRY GILLMAN, *Detroit*, *Michigan*.

THE LIANIS OR WOODY CLIMBERS of the Isthmus, form, as is well known, entangled obstructions in the forests, which can be penetrated only by aid of the axe or *machete*. M. Lévy, a botanical traveller in Nicaragua, sends to the "Bulletin of the Botanical Society" of France (Nov., 1869) an interesting account of them. The stems send out aerial roots freely, many of which reach the ground, when they enlarge in diameter and form new trunk-like supports. When cut in two the lower end of the severed stem sends down a root to rëestablish its connection with the ground. M. Lévy, finding one in this condition from which hung roots a foot long, cut it off anew; two days afterwards it had produced new roots of the same length. Cutting it again it promptly made new roots, but more slender ones. He repeated the operation up to the eighth time, but the new roots were now so slender and feeble that he desisted. The plant was a species of *Bignonia*.

JAPANESE SEA-WEEDS. — At a recent meeting of the Royal Academy of Amsterdam, a collection was exhibited to illustrate the care taken by the Japanese in applying to beneficial purposes the natural products of their country. The collection consisted of sixteen species of algæ which are useful for food or other purposes, together with fabrics manufactured from some of them. Several of the species were altogether new; in other instances the application was entirely novel. — *Quarterly Journal of Science*.

ZOOLOGY.

A NEW INSECTICIDE. — M. Cloez, who is engaged at the garden of the Paris Museum, has invented what he considers a complete annihilator for plant-lice and other small insects. This discovery is given in the "Revue Horticole," with the endorsement of its distinguished editor, E. M. Carrière. To reduce M. Cloez's preparation to our measures, it will be sufficiently accurate to say, take three and one-half ounces of quassia chips, and five drachms of stavesacre seeds, powdered. These are to be put in seven pints of water, and boiled until reduced to five pints. When the liquid is cooled, strain it, and use with a watering-pot or syringe, as may be most convenient. We are assured that this preparation has been